UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/656,582	09/06/2000	Gordon Taylor Davis	RAL9-2000-0080-US1	9845

25299   7590   01/29/2004

IBM CORPORATION
PO BOX 12195
DEPT 9CCA, BLDG 002
RESEARCH TRIANGLE PARK, NC   27709

EXAMINER
HOANG, PHUONG N

ART UNIT	PAPER NUMBER
2126	6

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/656,582	DAVIS ET AL.
	Examiner	Art Unit
	Phuong N. Hoang	2126

-- The MAILING DATE of this communication appears on the cover sheet with the corresp ndence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 28* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

   a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: .

DETAILED ACTION

1.   This Office Action is in response to the application filed on November 18, 2003.

Claims 1 – 28 are presented for examination.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in
section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
such that the subject matter as a whole would have been obvious at the time the invention was made to a
person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived
by the manner in which the invention was made.

3.   **Claims 1 - 2, 9 – 10, 12 - 19, 26 – 29 are rejected under 35 U.S.C. 103(a) as**

being unpatentable over Sfarti, US patent no. 4,809,169 in view of Bitar, US patent

no. 5,928,322.

4.   **As to claim 9,** Sfarti teaches a network processing system (network, col. 1 lines

20 – 30) including an embedded processor complex for controlling the programmability

of a network processor, the complex including a plurality of protocol processor units

(PPU), each PPU (computer system 10, col. 5 lines 20 – 30) containing:

at least one core language processor (host processor 12, col. 4 lines, 20 – 30

and fig. 1);

a plurality of coprocessors (coprocessors, 26, 28, 30, col. 2 lines 20 - 50) for

executing specific tasks (specific tasks to be performed by each of the multiple parallel

coprocessors, col. 10 lines 25 – 30, and col. 1 lines 20 - 25) for the system;

multiple coprocessor interfaces (buses 44, 46, 48, col. 5 lines 30 - 36) to access

and share the resources of the coprocessors with each CLP.

Sfarti does not explicitly teach a plurality of protocol processor units, two threads

(threads, col. 2 lines 30 - 32).

Bitar teaches two threads (threads, col. 3 lines 60 – 67).

It would have been obvious to apply the teaching of Bitar to Sfarti's system

because threads are necessary to run tasks, and implement a plurality of protocol

processor units to provide needs for a large network system.

5.   **As to claim 10,** Sfarti modified by Bitar teaches the coprocessor interfaces are

dedicated to supporting the code threads of each CLP (coprocessor interfaces are used

to interface between processor and coprocessors, so it has to support the threads).

6.   **As to claim 12, 13, 14,** Sfarti teaches the network processing system of claim 10

further including a FIFO buffer (buffer, col. 4 lines 55 – 60) between each thread and at

least one of the coprocessors.

7.   **As to claim 15, 16,** Sfarti teaches the network processing system including

specific operating instructions (instructions, col. 5 lines 30 - col. 6 lines 45) executed by

the threads of the CLPs which result in commands to control coprocessor operation,

which commands flow through the interface between the CLPs and the coprocessors.

8.   **As to claim 17,** Sfarti modified by Bitar teaches the network processing system

according to claim 15 wherein the instructions enable the system to identify long latency

events (latency, col. 4 lines 55 - 67) and short latency events (low-latency, col. 3 lines

59 - 60) according to the expected response time to access data in response to a

particular coprocessor command, and to grant full control to another thread when

execution of an active thread stalls due to a long latency event, or to grant temporary

control to another thread when execution of an active thread stalls due to a short

latency event.

9.   **As to claims 1 and 18,** see claim 9 above.

10.   **As to claims 2, 19,** see claim 10 above.

11.   **As to claims 26, 27,** see claims 15, 16 above.

12.   **As to claim 28,** Sfarti teaches the method according to claim 27 wherein

the execution is either direct or indirect (instructions can be executed in two selectable

modes, col. 5 lines 30 - col. 6 lines 45).

13.   **As t claim 29,** see claim 17 above.

14.   **Claims 3 – 8, 11, 20 – 25 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Sfarti, US patent no. 4,809,169 in view of Bitar, US patent no.

6,016,542, and further in view of Chung, US patent no. 5,404,469.

15.   **As to claim 3, 11, 20,** Sfarti teaches checksum coprocessor (numerical data

computations, col. 25 – 35).

Sfarti and Bitar do not explicitly teach the coprocessors are selected from the

group including a tree search coprocessor, stringcopy coprocessor, enqueue

coprocessor, datastore coprocessor, CAB coprocessor, counter coprocessor and policy

coprocessor.

Chung teaches datastore coprocessor (load/store unit). Stringcopy coprocessor,

counter processor are generic coprocessors executing specific tasks.

It would have been obvious to apply the teaching of Chung to Sfarti's and Bitar's

system because it provides the design choices for the coprocessors for executing

different specific tasks as needed for the system.

16.   **As to claim 4, 5, 21, 22,** Bitar teaches in the operation according to claim 3

further including a coprocessor execution interface arbiter to determine the priority

between multiple data threads (changes to the priority of one or more real-time threads

is another event, col. 4 lines 5 – 20).

17. **As to claim 6 - 8, 23 - 25,** see claim 12 - 14 above.

Response to Arguments

18. Applicant's arguments filed on 11/18/03 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sfarti, US patent no. 4,809,169 in view of Bitar, US patent no. 5,928,322.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong N. Hoang whose telephone number is (703) 605-4239. The examiner can normally be reached on Monday - Friday 9:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703)305-9678. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)746-7140.

Ph
January 21, 2004

MENG-AI T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100